

CLAIMS

1. An apparatus for treating patients suffering from vascular disease by means of infra-, audible- and ultrasound waves, **characterized in** that it contains a treating head (15) emitting sound waves with frequencies ranging from 1 Hz to 100 kHz and introducing these sound waves through a coupling medium (20) into a body portion (22) to be treated, and optionally a heating device (17) and a thermometer (16) for measuring the temperature of the body portion (22) to be treated, wherein the treating head (15), the heating device (17) and the thermometer (16) are all connected to an electronics (12) equipped with a control panel (11).

2. The apparatus according to Claim 1, **characterized in** that the treating head (15) is an electromagnetic or a piezoelectric tool.

3. The apparatus according to Claim 1 or 2, **characterized in** that the treating head (15) comprises a metallic base plate (28) having a treating surface (26) embedded into a holder (27) and several exciting means (29) arranged on the face of the base plate (28) opposite to the treating surface (26) in a given geometry separated from each other, wherein the projections of the exciting means (29) onto the mentioned face of the base plate (28) fall within the contour of the base plate (28).

4. The apparatus according to Claim 3, **characterized in** that the exciting means (29) are arranged in such a geometry due to which the sound wave appearing as the superimposition of sound waves emitted by the excitation means (29) and to be fed into the body portion (22) to be treated has a frequency ranging from 1 Hz to 100,000 Hz.

5. The apparatus according to Claim 3 or 4, **characterized in** that the holder (27) of the treating head (15) is made of a plastic material, the base plate (28) is made of aluminium and the exciting means (29) are cut away from a piezoelectric crystal with a crystal axis orientation that ensures the inverse piezoelectric effect of the exciting means (29).

6. The apparatus according to any of Claims 3 to 5, **characterized in** that the base plate (28) of the treating head (15) and the exciting means (29) are formed with a disc shape.

7. The apparatus according to any of the preceding Claims, **characterized**
5 **in** that the treating head (15) is equipped with a thermal sensor (25) for controlling the heating device (17).

8. The apparatus according to any of the preceding Claims, **characterized**
in that it is also equipped with a pulsimeter (14) for measuring the strength of the patient's pulse.

10 9. The apparatus according to any of the preceding Claims, **characterized**
in that it has a visual display unit (13) connected to the electronics (12).

10. The apparatus according to any of the preceding Claims, **character-**
ized in that the heating device (17) is attached to a resilient thermal blanket (18)
capable of receiving the body portion (22) to be treated and maintaining the tem-
15 perature between 25°C and 50°C, preferably between 30°C and 45°C within the
thermal blanket (18).

11. The apparatus according to any of the preceding Claims, **character-**
ized in that the coupling medium (20) is a material in gelous state.

12. The apparatus according to any of the preceding Claims, **character-**
20 **ized in** that the treating head (15) emits sound waves with frequencies and energy
densities adjusted and controlled, optionally taking into account data measured by
the thermometer (16) and the pulsimeter (14), by the electronics (12) via the con-
trol panel (11).

13. The apparatus according to any of the preceding Claims, **character-**
25 **ized in** that the heating device (17) generates heat and thereby maintains a preset
temperature within the thermal blanket (18), wherein the amount of heat gener-
ated can be adjusted and controlled, optionally taking into account data measured
by the thermal sensor (25) and the thermometer (16), by the electronics (12) via
the control panel (11).

14. The apparatus according to any of the preceding Claims, **characterized in** that the energy density of the sound wave emitted by the treating head (15) is at most 0.1 W/cm^2 , preferably 0.06 W/cm^2 .

5 15. The apparatus according to any of the preceding Claims, **characterized in** that during a single treatment unit the treating head (15) emits sound waves with a frequency continuously increasing within the period of 1 s to 200 s of the treatment unit from 1 Hz to 200 Hz at a rate of 1 Hz per second, then within the period of 200 s to 208 s of the treatment unit from 200 Hz to 1,000 Hz at a rate of 100 Hz per second, and finally within the period of 208 s to 307 s of the treatment unit from 1,000 Hz to 100,000 Hz at a rate of 1,000 Hz per second.
10